Claims

1.   In an optical system comprising a plurality of
interconnected optical components, a method of verifying if a
fiber connection between a first optical component and a second
5   optical component is correct, the method comprising:

        storing a predefined connection model in a processing
agent;

        generating a port identification message at the first
optical component;

10   transmitting the port identification message from the
first optical component to the second optical component over a
dedicated communications channel running parallel to the fiber
connection;

        conveying the port identification message received at
15   the second optical component and information identifying the
second optical component to the processing agent;

        checking the port identification message and
information identifying the second optical component against
the predefined connection model stored in the processing agent
20   to determine if the connection is correct; and

        indicating a correct connection or a misconnection.

2.   A method as claimed in claim 1 wherein the dedicated
communications channel running parallel to the fiber connection
is an optical fiber link separate from the fiber connection.

25   3.   A method as claimed in claim 1 wherein the dedicated
communications channel running parallel to the fiber connection
is a distinct wavelength channel inside the fiber connection.

4.   A method as claimed in claim 1 wherein the port
identification message transmitted from the first optical
component to the second optical component comprises
information about the first optical component including but not
5   limited to

        the type of component;

        the component location;

        port identification;

        component slot location; and

10   network element identification (ID).

5.   A method as claimed in claim 1 wherein the dedicated
communications channel running parallel to the fiber connection
is bi-directional.

6.   A method according to claim 1 wherein the processing
15 agent is resident on the first or second optical component.

7.   A method according to claim 1 wherein the predefined
connection model stored in the processing agent is generated
from user input of a pre-provisioned or inferred connection
expectation.

20 8.   An optical connectivity management system for
determining if a fiber connection between a first optical
component and a second optical component in an optical system
is correct, the system comprising:

        a processing agent for storing a pre-defined
25 connection model of the optical system;

a dedicated communications channel between the first optical component and second optical component running parallel to the fiber connection;

5　　an optical transmitter located at the first optical component for transmitting a port identification message over the dedicated communications channel to the second optical component;

an optical receiver located at the second optical component for receiving the port identification message
10　transmitted from the first optical component;

means for transmitting the port identification message received at the second optical component and information identifying the second optical component to the processing agent for processing; and

15　　means for indicating a correct connection or a misconnection.

9.　　An optical connectivity management system according to claim 8 wherein the dedicated communications channel between the first optical component and second optical component is an
20　optical fiber link separate from the fiber connection.

10.　　An optical connectivity management system according to claim 8 wherein the dedicated communications channel between the first optical component and second optical component is a distinct wavelength channel inside the fiber connection.

25　11.　　An optical connectivity management system according to claim 10 wherein the transmitter at the first optical component comprises an optical source with a WDM coupler and the receiver at the second optical component comprises a WDM filter with a photodetector.

12.   An optical connectivity management system according to claim 9 wherein the dedicated communications channel between the first optical component and the second optical component is bi-directional.

5 13.   A processing agent for use in an optical system to determine if a fiber connection between a first optical component and a second optical component is correct, the processing agent comprising:

       means for storing a predefined connection model of 10 the optical system;

       means for receiving a port identification message identifying the first optical component and information identifying the second optical component from the second optical component;

15   means for checking the port identification message and information identifying the second optical component against the predefined connection model; and

       means for indicating a correct connection or a misconnection.

20 14.   In an optical system comprising a plurality of interconnected optical components, a method of verifying if a fiber connection between a first optical component and a second optical component is correct, the method comprising:

       storing a predefined connection model in a processing 25 agent;

       adding a dither to an optical signal to be transmitted from the first optical component to the second optical component to generate a dithered optical signal;

transmitting the dithered optical signal from the first optical component to the second optical component over the fiber connection;

receiving the dithered optical signal at the second
5   optical component;

detecting the dither contained in the dithered optical signal received at the second optical component;

conveying the dither detected at the second optical component and information identifying the second optical
10   component to the processing agent;

checking the dither and information identifying the second optical component against the predefined connection model stored in the processing agent to determine if the connection is correct; and

15   indicating a correct connection or a misconnection.

15.   A method according to claim 14 wherein the dither is cancelled from the dithered optical signal at the second optical component using destructive interference.

16.   A method according to claim 15 wherein the
20   destructive interference is carried out using a low-loss, low-attenuation device.

17.   A method according to claim 15 wherein the destructive interference is carried out using an optical amplifier.

25   18.   A method according to claim 14 wherein the processing agent is control software located remotely from the first and second optical components.

19.   A method according to claim 18 wherein the processing agent is connected to the first and second optical components via electrical backplane connections.

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